



Navy presence and Navy sound sources in the Puget Sound

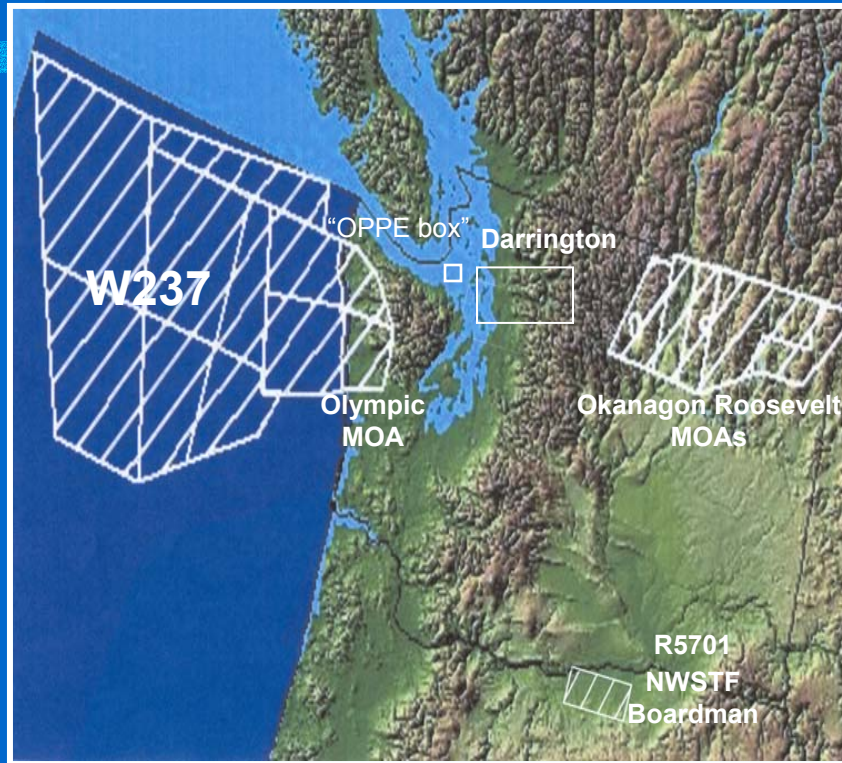


Discussion Topics

- Navy Presence in Puget Sound
- The importance of sound in Naval Operations
- Sound types and Sources
- Navy Sound sources in the Puget Sound
- Sonar Use
- Overview
- Stewardship

Navy Region Northwest

Surface, Air and sub-surface training areas



- **Primary Mission: Fleet Training**

- **Primary Sites**

- Okanagon / Roosevelt / Olympic MOAs
- Warning Area 237 Complex
- NWSTF Boardman & Restricted Area 5701
- Darrington Area
- PUGET SOUND: “OPPE” Box IVO Hein Bank

- **“OPPE BOX”**

- “Inside the lifelines” training only
- Lies outside of traffic separation scheme
- Small: Approx 10 by 10 NM
- Used by surface ships for Engineering training operational maintenance and scenario-driven simulations
- Operations conform to all Federal and Navy regulations pertaining to coastal waters

Navy Region Northwest

NUWC Keyport Instrumented Ranges



- **Primary Mission: Underwater Test, Training & Evaluation**

- Undersea Weapon Systems Testing
- USW Testing – Ship / Subs / Aircraft
- USW Training & Exercise Support
- Analysis & Evaluation

- **Primary Sites**

- Dabob Bay Range Complex
- Quinalt Underwater Tracking Range
- Nanoose (Canadian Range)

- **Capabilities**

- Tracking Information Systems
- Simulation / Stimulation Systems
- Acoustic Measurement Systems
- Undersea Range Support (Recovery)
- Data Acquisition & Analysis
- Unmanned Underwater Vehicle Ops
- Portable Ranges

Testing Environments:

- Shallow & deep water / warm & cold water
- Multiple bottom types
- Joint & Theater area ops / Distributed test systems

Navy ships home ported in Puget Sound

HOMEPORT	SHIPS	ACTIVE SONAR ?
Everett	3 Frigates (FFGs)	YES
	1 Guided Missile Destroyer (DDG)	YES
	1 Aircraft Carrier (CVN)	NO
Bremerton	3 Fast Logistics Ships (AOEs)	NO
	1 Aircraft Carrier (CVN)	NO
Bangor	8 Submarines (SSBNS)	NO

- Only four ships with active sonar capability are home ported in Puget Sound

Importance of Sound in Naval Operations

- Sound is the only energy source that can penetrate water for any distance
- Sound behavior is complex in the ocean environment
- Can be of critical tactical importance in Naval Operations

Silence = Stealth

What makes noise in Puget Sound?

- **Broadband Sound**
 - Wind, wave action, rain, currents
 - Biologic sources
 - Vessel noise / Traffic volume
 - Commercial / recreational activities
- **Narrowband Sound**
 - Whale vocalizations
 - Mid Freq Sonar
 - Ship's engineering plants
- **Background Noise**

Comparison of Sound Sources in the Ocean

Sound Sources

Sound Levels

Gale winds, rain

90 + dB

Gray Whale

142-185 dB

Orca (vocalization)

131-186 dB

Orca (echo-location)

200-225 dB

Lightning Strike on Surface

260 dB (approx.)

Bell 212 Helicopter @ 1000 ft.

159 dB

Zodiac inflatable boat

162 dB

Ferry

170 dB

Large tanker

177 dB

Military sonar

230 dB

Air Gun array (32 guns)

255 dB

Silence is Stealth

- **Transiting USN ship-radiated noise levels are significantly less than similarly sized commercial vessels**
- **Noise reduction by practice and design**
 - **Hull/ structural fixtures/ propulsion equipment designed to minimize noise and vibration**
 - **Installed vibration / noise suppression mounts between machinery and the hull**
 - **Quiet ship bills**
 - **Active measures to reduce radiated noise through the use of compressed air**

SONAR (Sound Navigation and Ranging)

- **A tool to define the characteristics of the ocean beneath the surface**
 - **ACTIVE** Sonar employs a transmitter to send out sound pulses and a receiver to record returning echoes.
 - **PASSIVE** sonar listens for sounds generated by other sources
- **Nature**
 - Whales, dolphins

Man-Made Sonar Use

- **Commercial / Recreational:**
 - Determine Depth / Navigation
 - Charting the ocean floor
 - Fish Finders
 - Salvage
- **Navy:**
 - Passive and Active Sonar to detect threats
 - Determine Depth / Navigation

US Navy use of Active Sonar

- **US Navy vessels use ACTIVE Sonar only under unique circumstances :**
 - Location of Underwater Obstacles / Barriers/ Mine fields
 - To locate Submarines undetectable by other means
- **Active sonar use is closely monitored**
 - Training and Maintenance are essential - exceptional degree of focus to maximize opportunities
 - Exercises usually conducted in open ocean
 - PACFLEET approval required for Active Sonar use in Puget Sound and surrounding coastal waters

USN Active Sonar use in the Puget Sound

SHIP	Hours underway east of Cape Flattery		Active sonar hours east of Cape Flattery		Percentage of active sonar use/ time east of Cape Flattery	
	2002	2003	2002	2003	2002	2003
R. M. DAVIS	485	46	1	2	0.03%	4%
FORD	N/A	975	14	5.5	N/A	0.6%
SHOUP	109	693	3	12	2.7%	1.7%
INGRAHAM	344	178	0	0	0	0

- On the four USN ships home ported in Puget Sound with active Sonar capability, Active Sonar was used for only 1% of the time these ships were underway inside Puget sound and the Straits of Juan de Fuca

Overview

- The Puget Sound is a complex environment
- Naval Vessels are a very small presence in the Puget Sound when compared to other traffic
- Naval vessels are quiet by practice and design
- Active Sonar use is minimal
- Suggestion for follow on study: The impacts of Broadband noise

Stewardship

- A profound interest in stewardship of the environment - It's where we live and work
- Whether operating in the open ocean, on a range complex or in Puget Sound, sonar use is subject to Navy rules & federal laws
- U.S. Navy works closely with NOAA on marine issues.
- NW Navy participating in the Orca Recovery Plan

Questions ?